The Effects of Credit Collection Policy on Portfolio at Risk of Microfinance Institutions in Tanzania

Danstun B. Ngonyani[a]   Harun J. Mapesa[b]

[a] Assistant Lecturer, Faculty of Commerce and Business Studies, St Johns University of Tanzania, Dodoma, Tanzania, dngonyani@sjut.ac.tz, (Corresponding Author)
[b] Senior Lecturer, School of Business, Mzumbe University, Mzumbe – Tanzania, hjmapesa@mzumbe.ac.tz

Abstract
This paper presents the results of the study on the effect of credit collection policy on portfolio risk management among microfinance institutions in Tanzania. The study used cross-sectional survey data of microfinance institutions in three regions of Dar es salaam, Morogoro and Dodoma. Random sampling was employed to obtain a sample of 219 respondents in all three regions. Multiple linear regression analysis was used to determine the effect of credit collection policy on portfolio at risk of microfinance institutions. Results show that, interest rates positively influence portfolio at risk of microfinance institutions. On the other hand, grace period on loans and loan size are negatively related to portfolio at risk of microfinance institutions. These results suggest that, microfinance institutions can focus on explanatory variables used in the study for enhanced quality of financial performance of the microfinance industry.

1.0 Introduction

Microfinance institutions are proven to have significant contribution in reducing poverty among the low-income earners and disadvantaged individuals in society. These institutions have been helpful in facilitating entrepreneurship skills and provision of knowledge on capital, risks and empowerment in economic activities (Colquitt, 2007). Microfinance institutions intended to simplify provision of micro financial services to low income households and self-employed individuals (Brown & Moles, 2011). In order to continue serving their clients with microcredit facilities. The lending institutes need to effectively manage their loan portfolios. Microfinance portfolio management is the driving force to enable sustainable financial performance. Microfinance institutions that experience high risk of its loan portfolio, is an indication of high delinquency from customers. This may lead to underperformance of its loan portfolio thus threatening the ability to continue in operation in the long-term (Ledgerwood, 1999). Microfinance institution need to manage portfolio quality against delinquency and defaults, by establishing effective strategies in the lending and collection processes. Efficient credit collection policy within the institutional framework, helps credit management process be effective and hence timely collection of funds from clients.

However, there have been controversy from the microfinance institutions concerning high rate of default/delinquency by their clients. Increase of default rates in loan portfolios indicates that microfinance institutions are not attaining the internationally accepted standard portfolio at risk of 3 percent. In addition, MIX (2010) reported that MFIs in Sub Saharan Africa had increased portfolio at risk with region records greater than 5%. This is a cause of concern since it erodes effort put forth of establishing microfinance institution and ensure financial inclusion of poor people. Schmittlen, (2010); Colquitt, (2007) pointed out that, weak credit collection policy has been the main cause of business failures including microfinance institutions. The essence of microfinance credit collection policy is to facilitate effective credit administration of disbursed funds. Also, ensure that microfinance institutions rate of returns outweigh the cost incurred to delivering credit. Existence of efficient credit collection policy within institutional framework, helps loan officers be effective and timely in collection of funds from clients. Emphasis need to be put in appraising and credit supervision of borrowers. Microfinance institution that invests

into borrowers' ability to self-response to loan repayment have a better chance to maintain quality loan portfolios (Edwards, 2004). Thus, institutions need to establish strategies that would enable efficient loan recovery from clients before getting overdue.

Several studies have been conducted on factors for effective credit collection in MFIs; but, the level of significance of factors varies with studies. Some of the determinants are found to be significant while others not. At the same time, some determinants are significant to only set of MFIs. Empirical evidences from the findings by Kar & Swain, (2014); Adongo and Stork, (2000); Nyamsogoro, (2010) and Zohair, (2013) reported that interest rates, loan sizes and loan duration influence financial sustainability and portfolio performance of microfinance institutions. This is contrary to the findings by Tundui & Tundui, (2013); Folefack & Teguia, (2016); Onyeagocha, *et al.,* (2012) and Shu-Teng, *et al.* (2015) which indicated that, the factors were positively associated to repayment problems and against quality loan portfolio performance. Despite of essential contributions made on previous empirical studies, much of past research suffers from mixed findings leading to inadequate conclusions. In addition, some past studies have dwelt on member-based microfinance institutions while other studies focused on only one microfinance programme. Consequently, they have been inefficient in establishing the factors contributing to effective credit collection policy on portfolio at risk of microfinance institutions in Tanzania. This study is comprehensive in coverage and focused on non-member-based microfinance institutions. Therefore, it intends to fill that gap by providing further insight and information on the role of microfinance credit collection policy on portfolio risk management in Tanzania.

2.0 Materials and Methods

The design adopted for this study was a cross-sectional survey method, which enabled undertaking of both quantitative and qualitative data from study participants. A comprehensive sampling frame of microfinance institutions that do not require clients be registered members to access credits facilities (non-member-based microfinance institutions) was generated by combining data set from the Bank of Tanzania (Microfinance section) (2010); the Ministry of Industry and Trade via the licensing department (2014); Tanzania Association of Microfinance Institution (TAMFI) (2015) and the SELF

Microfinance Fund (2015). The database provided information regarding the registration, operation and their outreach services. Simple random sampling technique was applied to identify 219 of non-member-based microfinance institutions in Kinondoni, Ilala and Temeke districts in Dar es Salaam region, Morogoro urban district in Morogoro region and Dodoma urban district in Dodoma region were involved. The selected microfinance institutions were supplied with semi-structured questionnaires for filing information required for the study. Descriptive statistics of mean, standard deviation and percentages scores were presented. In addition, inference statistics was used to test the hypothesis and drawing of conclusion from the study findings.

2.1 Explanation of independent and control variables

The independent variables involved in this study were interest rates, grace period of loans, loan sizes and loan duration. On the other hand, four control variables were involved in analyzing the relationship between the hypothesized independent and dependent variable. The purpose was to minimize the contribution of the variables of interest after controlling for the other re-known factors. The control variables were microfinance institution (MFIs) age, microfinance institution (MFIs) size, Owner/manager education qualifications and Owner/manager experiences.

Table 1: Explanation of independent and control variables

Independent variables	Explanation (Measure)
Interest rates	Average rate of interest charged on loan products to borrowers per year.
Loan size	Average amount of money in Tsh given to borrower in a year
Loan duration	Average number of days for which borrowed funds are fully repaid
Grace period of loans	Average number of days given to borrowers before first installments to microfinance institutions
Control variables	
MFI size	Total assets of microfinance institution in Tsh.
MFI age	Number of years since the establishment
Owner/manager experiences.	Number of years of working in microfinance industry
Owner/manager education qualifications	Education qualification attained by the MFI manager. 1=Secondary education; 2=Technical education; 3=University education

The dependent variables in this study was portfolio at risk of microfinance institutions. The dependent variable was measured as;

Portfolio at Risk (PaR) 90 days = (Outstanding principal balance of all loans past due more than 90 days) / (Outstanding principal balance of all loans)

2.2 Model Specification

The study employed multiple linear regression model as analytical model technique. The multiple regression examined the relationship between a single outcome measure and several predictor variables. The linear regression model was of the following form:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + Controls + \varepsilon$

Where: Y = Predicted dependent variable (Portfolio at risk),

β_0 = Constant,

$\beta_1 - \beta_4$ = regression coefficients,

$X_1 - X_4$ = Value of the predictor variables –interest rates, grace period of loans, loan sizes and loan duration.

Controls = control variables (MFI size, MFI age, Manager experience and manager education. ε = Error term

3.0 Results

Table 2: Distribution of dependent, independent and control variables in sampled MFIs

Variables	Mean	Std. Dev	Min	Max	N
Dependent variable					
Portfolio at risk (PaR 90) %	8.9898	2.98651	3.67	21	219
Independent variables					
Loan duration	245.242	185.41061	90.00	1080.00	219
Interest rates charged	26.3904	7.61423	15.00	45.50	219
Grace period of loans	3.1553	6.48524	0.00	30.00	219
Loan size	3041108.3	2719066.8	250000	10000000.00	219
Control Variables					
MFIs age	6.28	2.189	3	15	219
MFIs size (TAS)	276014051.7	184098247.2	70000000	615000000	219
Manager experiences	6	3.294	2	18	219

Table 2 presents mean portfolio at risk of the surveyed microfinance institutions 8.9898 percent. The minimum average portfolio at risk was reported 3.67 and maximum was 21.00 percent. The Table also shows variable average loan duration of microfinance institution with a mean value of 245.242 days. The minimum and maximum loan duration are 90.0 and 1080.0 days respectively. The interest rates variable in the table indicates a minimum and maximum of 15.00 and 45.50 percent. In addition, the mean interest rates charged by microfinance institutions during the study period was 26.39 percent. The dispersion of the interest rates is 7.61423 percent. Furthermore, Table 2 above displays variable grace period of loans of microfinance institutions with a mean of 3.1553 days. The study again shows a minimum of 0.00 days and maximum of 30.00 days. The variation in the provision of grace period during the period of study was 6.4852 days. The variable loan size exhibits a minimum and maximum of 250,000Ths and 10,000,000 Tsh respectively. Moreover, the table also reports a mean loan size of 3,041,108.3 Ths during the period under study. It also indicates a variation of 2,719,066.8 Tsh across microfinance institutions in study areas.

Likewise, the MFIs age was observed to have a mean value of 6.28 years. The study again shows a minimum and maximum MFIs age reported 3.00 and 15.00 years respectively. The age distribution indicates that, MFIs involved in the survey had ample experience in microfinance operation and therefore suitable for the nature of this study. The Owner/manager experiences falls within a range of 2.00 years (minimum) and 18.00 years (maximum). The mean experience of MFI managers across the study areas was 6.00 years. The dispersion of owner/manager experiences is 3.29 years. The variable MFI sizes has recorded a mean of Tsh 276,014,051.74. It also reveals minimum and maximum total assets of MFIs to be Tsh 70,000,000.00 and Tsh 615,000,000.00 respectively. The variation in the amount of assets among microfinance institutions during the period of study was Tsh 184,098,247.16. The mean total assets of MFIs imply that, selected MFIs in this study are well rooted financially to provide credit services to the needy clients sustainably.

Table 3: Distribution of owner-managers' education qualification in sampled MFIs

Education level of Owner-managers	Microfinance institutions	
	Number	%
Secondary education	23	10.5
Post-secondary non-University	101	46.1
University	95	43.4
Total	219	100.0

Table 3 presents education qualification of Owner-managers of microfinance institutions for the period. The table shows that 23 (10.5 percent) of microfinance institutions had managers with secondary level of education. Moreover, 101 (46.1 percent) of managers among studied MFIs had post-secondary non-university education. On the other hand, 95 (43.4 percent) of MFIs were managed by University graduates. The distribution suggests that most MFIs are managed by Chief Executive Officers with Post-secondary non-university education, followed University graduates. This further imply that, prevailing threats to portfolio performance of MFIs may be associated with CEOs inability to effectively manage their MFIs. Resulting to unsustainable financial performance and inadequate outreach to low-income clients.

3.1 Correlations Analysis

Table 4 below provides correlation matrix of the variables related to credit collection policy on portfolio at risk of microfinance institutions. The Pearson correlation results presented, indicates variable grace period of loans and loan size are negatively and significantly related to portfolio at risk of MFIs. In addition, variable interest rate is significant and positively related to portfolio at risk. The variable loan duration denotes insignificant relationship to dependent variable. On the other hand, the correlation table aids to verify for the collinearity between variables employed in a study. The 'rule of thumb' considers the existence of collinearity between predictor variables at a correlation value of 0.5 and above. Basing on this observation, the correlation analysis presented

confirms to have no multicollinearity problems that exist between the variables in this study.

Table 4: Correlation matrix of credit collection policy on Portfolio at risk of MFIs (n =219)

Variables	1	2	3	4	5	6	7	8	9	10
1.Portfolio at risk	1									
2.Loan duration	-.090	1								
3.Interest rates	.168*	.056	1							
4.Grace period	-.140*	.082	.033	1						
5.Loan size	-.171*	.115	-.058	-.078	1					
6.Manager experience	.088	.023	.045	-.007	-.015	1				
7.MFI age	-.063	.012	-.046	-.080	-.036	.026	1			
8.MFIs size	.157*	-.001	.013	-.043	.012	.048	-.133*	1		
9.Manager sec education	-.019	.085	-.096	.040	-.003	-.024	-.033	.073	1	
10.Manager university	.021	.137*	.087	-.068	.106	-.090	.127	-.077	-.246**	1

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

3.2 Econometric Results

This study aimed to determine the effect of credit collection policy on portfolio at risk of microfinance institutions in Tanzania. The multiple linear regression model was used in order to examine the combined effect of credit collection policy on portfolio at risk. The level of significance (p-values) was used to test the influence of each variable on portfolio at risk of microfinance institutions. An overall model fit was used to test the combined effect of all variables on the portfolio at risk of microfinance institutions. The overall model was significant at $F(9, 209) = 16.275$; $p = .002 < 0.05$. This means that, in general the concepts selected for this study did indeed explain a significant proportion of the variance in portfolio at risk of microfinance institution. Similarly, the study found that the estimated result of multiple regression analysis is also at a quite satisfactory level. The adjusted R^2 is 0.384 and observed R^2 value is 0.412, respectively. This means that independent variables can explain about 41.2% of the portfolio at risk of microfinance institution.

Table 5: Model results for credit collection policy variables on portfolio at risk

Variables	Coefficients	Standard Error	T Value	P Value
(Constant)	5.254	7.836	.670	.503
Log loan duration	-.974	.858	-1.135	.258
Interest rates	.061	.026	2.350	.020
Grace period	-.068	.030	-2.239	.026
Log loan size	-1.487	.570	-2.611	.010
Manager experience	.072	.059	1.209	.228
MFI age	-.086	.091	-.948	.344
Log MFI size	1.661	.775	2.143	.033
Manager sec education	.069	.438	.158	.874
Manager univ education	.504	.641	.786	.433

R- Square 0.412; Adjusted R- Square 0.384; F- Statistic 16.275
Prob. (F-stat) .002; Number of observations 219; Significant at 5%

PAR 90 days = β_0 - $\beta_1(LOD)$ + $\beta_2(INTR)$ - $\beta_3(GRP)$ - $\beta_4(LS)$ +β_5Controls + ε..............
Where:
PAR = Portfolio at risk more than 90 days of MFIs
LD = Loan duration, INTR = Interest rates, GRP = Grace period of loans, LS = Loan size
Controls = control variables (MFI size, MFI age, Manager experience and manager education.

4.0 Discussion

From Table 5 above, the variable interest rate was positively related and statistically significant at level of 5% (p = 0.020). As such it contradicts the hypothesis that no relationship exists between microfinance institutions interest rates charged and portfolio performance. This means that, interest rates charged by MFIs is a determinant of portfolio at risk of microfinance institution. That is any unit increase of the rate of interest charged to microfinance borrowers results in increased portfolio at risk of the lending institution by 0.061. The cost of the loan is likely to be not manageable by the borrowers leading to higher default rate and increase risk of loan portfolio of microfinance institution. In order for the microfinance institutions experience lower portfolio at risk. They have to charge low interest rates to their clients to enable manage regular loan repayments. These findings are in line with Wenner *et al.* (2007; Swain and Varghese (2013) and Papias &

Ganesan (2009) who shared that, high interest rates charged by most microfinance institutions on credit facilities contributed to loan default and low-quality portfolio performance of the company. Despite of strong appraisal and assessment strategies, high interest rates to borrowers results to default payments and high portfolio at risk of the MFIs. In addition, Mwangi (2016) added that, when lending rates rise, financial institutions attract its borrowers to invest into riskier projects for higher return on investment. In so doing, if such projects are going to fail, even the creditworthy borrowers are likely to shy off from borrowing. Ultimately, portfolio at risk of the microfinance institution rises which threatens long term operation of the company.

The variable loan size in the regression table above is negatively related and statistically significant at level of 5% (p = 0.01). These findings imply that, if other variables are held constant, any unit increase of loan size to microfinance borrowers result in decrease risk of portfolio of microfinance institution by 1.487. This further means that, microfinance institutions which provide reasonably big loan sizes to their borrowers, makes them more committed to their respective lending institutes. In addition, enables widen their investments and become negatively associated to repayment problems. Crabb & Keller (2006) and Adongo and Stork (2006) argued that, efficient loan size that fits capability of the borrower to repay stimulate client's enterprise performance. Portfolio at risk of microfinance institution is reduced if borrowers appreciate for the loan amount offered and honor their obligation of repayments. That, improves portfolio at risk and strengthen financial performance of the microfinance institution. On the other hand, microfinance institutions that provides bigger loan size to their clients implies that, one has proven experience in managing his business and proven committed in servicing given loan effectively.

Moreover, the findings of the variable grace period records negatively related and statistically significant at level of 5% (p = 0.026). This means the variable is determinant of portfolio at risk of microfinance institutions. The findings further imply that a unit increase of grace period of loans leads to 0.068-unit reduction in loan portfolio at risk of microfinance institutions. The findings are against the hypothesis which stipulated that grace period is not related to portfolio performance of microfinance institutions. In this

regard, provision of grace period to borrowers makes them utilize funds effectively into planned investment projects. Abreham (2002) added that, the provision of grace period to microfinance borrowers influence positively repayment performance and therefore reduction of risk embedded in the microfinance loan portfolio. In addition, Ngahu & Wagoki (2014) added that, microfinance institutions which provides a grace-period to their clients enhance borrowers' entrepreneurship capability. More importantly, enable them reorganize accordingly to undertake their obligation of regular loan repayments.

4.1 Conclusion

This paper has presented the results of a study on the effects of credit collection policy on portfolio at risk of microfinance institutions in Tanzania. The study used a sample from three regions namely Dar es Salaam, Morogoro and Dodoma. Using multiple linear regression model analysis, results revealed that, loan size to borrowers, grace period of loans and interest rates charged to borrowers determines portfolio at risk of microfinance institutions. These findings further show that, loan size to borrowers and grace period of loans decreases portfolio at risk of microfinance institutions. This means that, high loan repayment from microfinance borrowers are associated with grace period and large loan sizes. Moreover, results show that, the variable interest rates charged to borrowers is evidenced to increase portfolio at risk of the microfinance institutions.

Acknowledgement

References

Abreham G. (2002), *Loan repayment and its Determinants in Small-Scale Enterprises Financing in Ethiopia: Case of private borrowers Around Zeway Area*, (Master of Science in Economic Policy Analysis) Addis Ababa University, Ethiopia. Available http://etd.aau.edu.et/handle/123456789/2804

Adongo, J. & Stork, C (2006) *Factors Influencing the Financial Sustainability of Selected Microfinance Institutions in Namibia*. The Namibian Economic Policy Research Unit (NEPRU). Ausspannplatz, Windhoek, Namibia; Research Report No. 39. Oct 29, 2005. Available: https://www.afdb.org/fileadmin/uploads/afdb

Brown, K., & Moles, P (2011) *Credit Risk Management,* Edinburgh Business School Heriot-Watt University, Edinburgh

Colquitt, J (2007), *CREDIT RISK MANAGEMENT* Third Edition; How to Avoid Lending Disasters and Maximize Earnings, McGraw-Hill, New York

Crabb, P. R., & Keller, T. (2006). "A Test of Portfolio Risk in Microfinance Institutions", *Faith and Economics,* 47/48 pp 25-29

Edwards, B (2004), *Credit Management Handbook, Fifth Edition,* Gower Publishing Limited Gower House Croft Road Aldershot Hants GU11 3HR England.

Folefack, A.J., & Teguia, J.S. (2016). "Factors Influencing Loan Repayment by Credit Beneficiaries of Microfinance Institutions in The Far North Region, Cameroon", *Russian Journal of Agricultural and Socioeconomic Sciences (RJOAS), Vol. 3 No. 51, pp 44 – 51, DOI http://dx.doi.org/10.18551/rjoas.2016-03.04*

Hair, J. F. 2010*. Multivariate data analysis:* a global perspective, Upper Saddle River, N.J., Pearson.

Kar, A & Swain, R.B (2014) Interest Rates and Financial Performance of Microfinance Institutions: Recent Global Evidence; *European Journal of Development Research;* DOI: 10.1057/ejdr.2013.33, October, 14.

Ledgerwood, J. (1999) *Microfinance Handbook: An Institutional and Financial Perspective.* The World Bank: Washington, D.C.

Mix Microfinance World, (2010). *Sub-Saharan Africa Microfinance Analysis and Bench marking Report.* A report from Microfinance Information Exchange (Mix) and Consultative Group to Assist the poor (CGAP). Pennsylvania Avenue NW - Suite 307 Washington, DC - 20006, USA.

Mwangi, N (2016). "*The Effect of Interest Rates on Microfinance Institutions' Products in Kenya*"; A Case Study of Kenya Women's Finance Trust in Nairobi County.   (Master

in Business Administration) Chandaria School   of Business; United States   International University – Africa, Available: http://erepo.usiu.ac.ke/11732/2645

Nyamsogoro, G. D. (2010). Financial Sustainability of Rural Microfinance Institutions (MFIs) in Tanzania; PhD thesis, University of Greenwich. UK

Ngahu S.T., & Wagoki A.J. (2014). Effect of Group Lending on Management of Loan Default Rates among Microfinance Institutions in Nakuru Town, Kenya, *International Journal of science and Research (IJSR),* Vol 3 Issue 3 pp 606 – 609; Paper ID: 020131233

Onyeagocha, S. U. O., Chidebelu, S. A. N. D., Okorji, E. C., Ukoha, A., Osuji, M. N., & Korie O. C. (2012) "Determinants of Loan Repayment of Microfinance Institutions in Southeast States of Nigeria". *International Journal of Social Science and Humanities*, Vol.1 No.1. pp 4 - 9

Papias M. M., & Ganesan P. (2009) "Repayment behavior in credit and savings cooperative societies Empirical and theoretical evidence from rural Rwanda". *International Journal of Social Economics,* Vol. 36 (5), pp 608-625.

Shu-Teng, L., Zariyawati, M.A., Suraya-Hanim, M., & Annuar, M.N (2015) "Determinants of Microfinance Repayment Performance: Evidence from Small Medium Enterprises in Malaysia*", International Journal of Economics and Finance;* Vol. 7, No. 11, pp 110 - 120

Schmittlen, M. (2010), "Micro credit and the poorest of the poor, theory and evidence from Bolivia", *Journal of microfinance* Vol 2 No 1 pp 12.

Swain, R.B., & Varghese, A, (2013) "Delivery Mechanisms and impact of microfinance training in Indian self-help group*",* Journal of International Development, 25 (1): pp 11 -21

Tundui, C and Tundui, H, (2013), Microcredit, Micro Enterprising and Repayment Myth: *The* Case of Micro and Small Women Business Entrepreneurs in Tanzania; *American Journal of Business and Management,* Vol. 2, (1) pp 20 -30

Wenner, M., Navajas, S., Trivelli, C., & Tarazona, A (2007) Managing Credit Risk in Rural Financial Institutions in Latin America; Sustainable Development Department, Inter-American Development Bank, New York Avenue, Washington, D.C.

Zohair, M. (2013). Factors Affecting Repayment of Loans by Micro-borrowers in Tunisia: An Empirical Study. *Journal of Management & Public Policy*, Vol. 4, No. 2, pp, 4 – 16